

## Claims

We claim:

1. A method for specifying a computer-implemented process, the method  
5 comprising:

displaying a graphical user interface comprising a plurality of possible steps that  
are useable in specifying at least a portion of a process;

receiving user input selecting a plurality of steps specifying a first portion of the  
process;

10 creating a process specification in response to the user input, wherein the process  
specification comprises a plurality of steps specifying a first portion of the process;

creating a block diagram in response to user input, wherein the block diagram  
specifies a second portion of the process;

15 wherein the block diagram comprises a plurality of interconnected nodes which  
visually indicate operation of the second portion of the process;

wherein the process specification and the block diagram collectively specify the  
computer-implemented process.

2. The method of claim 1,  
20 wherein the block diagram graphically specifies a procedure that uses values  
determined by the first portion of the process to produce one or more results.

3. The method of claim 1,  
25 wherein the block diagram graphically specifies a decision operation based on  
execution results determined by steps in the process specification.

4. The method of claim 1, further comprising:  
including one or more steps in the process specification operable to perform a  
plurality of operations based on a result computed by the block diagram.

30 5. The method of claim 1, further comprising:

including a step in the process specification that references the block diagram.

6. The method of claim 1, further comprising:

executing the process, wherein said executing comprises executing the process  
5 specification and executing the block diagram.

7. The method of claim 1, further comprising:

displaying a graphical user interface useable to create the block diagram;  
receiving user input specifying the block diagram via the graphical user interface.

8. The method of claim 1,

wherein said creating the block diagram comprises:

displaying a plurality of nodes in the diagram, wherein one or more of the  
nodes are displayed in response to user input;

creating interconnections among the plurality of nodes in response to user  
input.

9. The method of claim 1,

wherein said creating the block diagram in response to user input comprises  
20 creating a graphical program in response to user input.

10. The method of claim 1,

wherein the block diagram includes a first set of nodes having values determined  
by execution results of the process specification;

wherein said creating the block diagram comprises:

including a second set of function nodes in the block diagram in response  
to user input;

connecting nodes from the first set of nodes to nodes from the second set  
of function nodes, in response to user input.

11. The method of claim 1, wherein each of the plurality of steps in the process specification has one or more associated values, the method further comprising:

receiving user input specifying at least a subset of the values associated with the plurality of steps;

5 automatically including one or more nodes in the block diagram, wherein each node corresponds to a value from the specified at least a subset of values.

12. The method of claim 1,  
wherein the graphical user interface indicates operations that can be performed on  
10 an object;

wherein the user input specifies one or more operations on the object;  
wherein said creating the process specification is performed in response to user  
input received via the graphical user interface specifying one or more operations to be  
performed on the object.

13. The method of claim 12,  
wherein the object is an image.

14. The method of claim 1, wherein the process specification comprises a  
20 script.

15. The method of claim 1, wherein the process specification is stored as a computer program.

16. The method of claim 1, further comprising:  
receiving user input specifying a plurality of code modules;  
wherein said creating the process specification comprises including a reference to  
each specified code module in the process specification.

17. The method of claim 1,

wherein said creating the process specification in response to user input comprises creating a program portion coded in a text-based programming language in response to user input.

5           18.     The method of claim 1,  
              wherein process is executable to inspect a device;  
              wherein the block diagram is executable to determine an inspection classification  
for the device, depending on execution results of the process specification.

10           19.     The method of claim 1,  
              wherein the process is a machine vision process executable to visually inspect a  
device;  
              wherein the block diagram is executable to determine an inspection classification  
for the device, depending on execution results of the process specification.

15           20.     The method of claim 1,  
              wherein the process is executable to perform one or more of the following types  
of applications:  
              a machine vision application; an image processing application; an image analysis  
20     application; a motion control application; an industrial automation application; a process  
control application; a test and measurement application; a simulation application.

25           21.     A method for specifying a computer-implemented process, the method  
comprising:  
              displaying a graphical user interface (GUI), wherein the GUI includes operations  
that are selectable to be included in a process specification;  
              receiving user input to the GUI, wherein the user input selects operations for  
inclusion in the process specification;  
30           creating the process specification in response to the user input, wherein the  
process specification specifies a first portion of the process;

creating a block diagram in response to user input, wherein the block diagram specifies a second portion of the process;

wherein the process specification and the block diagram collectively specify the computer-implemented process.

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22. The method of claim 21,

wherein the block diagram graphically specifies a procedure that uses values determined by the first portion of the process to produce one or more results.

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23. The method of claim 21,

wherein the block diagram graphically specifies a decision operation based on execution results determined by steps in the process specification.

24. The method of claim 21, further comprising:

including one or more steps in the process specification operable to perform a plurality of operations based on a result computed by the block diagram.

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25. A method for specifying a computer-implemented process, the method comprising:

receiving user input indicating operations to be performed on an object;

storing a plurality of steps in a script in response to the user input, wherein each step is operable to perform an operation;

creating a block diagram in response to user input, wherein the block diagram specifies a decision operation based on execution results of the plurality of steps;

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wherein the script and the diagram collectively specify the computer-implemented process.

26. A method for specifying a computer-implemented process, the method

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comprising:

creating a process specification in response to user input, wherein the process specification comprises a plurality of steps specifying a first portion of the process;

creating a block diagram in response to user input, wherein the block diagram specifies a second portion of the process;

5        wherein the block diagram comprises a plurality of interconnected nodes which visually indicate operation of the second portion of the process;

      wherein the process specification and the block diagram collectively specify the computer-implemented process.

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27.     A memory medium for specifying a computer-implemented process, the memory medium comprising program instructions executable to:

      display a graphical user interface comprising a plurality of possible steps that are useable in specifying at least a portion of a process;

15        receive user input selecting a plurality of steps specifying a first portion of the process;

      create a process specification in response to the user input, wherein the process specification comprises a plurality of steps specifying a first portion of the process;

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20        create a block diagram in response to user input, wherein the block diagram specifies a second portion of the process;

      wherein the block diagram comprises a plurality of interconnected nodes which visually indicate operation of the second portion of the process;

      wherein the process specification and the block diagram collectively specify the computer-implemented process.

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28.     The memory medium of claim 27,

      wherein the block diagram graphically specifies a procedure that uses values determined by the first portion of the process to produce one or more results.

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29.     The memory medium of claim 27,

wherein the block diagram graphically specifies a decision operation based on execution results determined by steps in the process specification.

30. The memory medium of claim 27, further comprising program instructions  
5 executable to:

include one or more steps in the process specification operable to perform a plurality of operations based on a result computed by the block diagram.

31. The memory medium of claim 27,  
10 wherein said creating the block diagram comprises:  
displaying a plurality of nodes in the diagram, wherein one or more of the nodes are displayed in response to user input;  
creating interconnections among the plurality of nodes in response to user input.

32. The memory medium of claim 27,  
15 wherein the graphical user interface indicates operations that can be performed on an object;  
wherein the user input specifies one or more operations on the object;  
20 wherein said creating the process specification is performed in response to user input received via the graphical user interface specifying one or more operations to be performed on the object.

33. The memory medium of claim 32,  
25 wherein the object is an image.

34. The memory medium of claim 27,  
wherein the process is a machine vision process executable to visually inspect a device;  
30 wherein the block diagram is executable to determine an inspection classification for the device, depending on execution results of the process specification.

35. A system for specifying a computer-implemented process, the system comprising:

a processor;

5 a memory storing program instructions;

wherein the processor is operable to execute the program instructions to:

display a graphical user interface comprising a plurality of possible steps that are useable in specifying at least a portion of a process;

10 receive user input selecting a plurality of steps specifying a first portion of the process;

create a process specification in response to the user input, wherein the process specification comprises a plurality of steps specifying a first portion of the process;

15 create a block diagram in response to user input, wherein the block diagram specifies a second portion of the process;

wherein the block diagram comprises a plurality of interconnected nodes which visually indicate operation of the second portion of the process;

20 wherein the process specification and the block diagram collectively specify the computer-implemented process.